No. 7200039

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

North American Plant Breeders

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF seventeen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (84 STAT. 1542) AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

ALFALFA

'Anchor'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 29th day of September in the year of our Lord one thousand nine hundred and seventy-eight

Attest:

Leonard Lee

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Secretary of Agriculture

FORM GR-470
(12-15-72)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

FORM APPROVED
OMB NO. 40-R3712

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

1. VARIETY NAME OR TEMPORARY DESIGNATION	2. KIND NAME	FOR OFFICIAL USE ONLY	
Anchor (tested as RP38)	Alfalfa	PV NUMBER 72039	
3. GENUS AND SPECIES NAME	4. FAMILY NAME *(Botanical)*	FILING DATE 10.12.71	TIME 1:30 P.M.
Medicago sativa	Leguminacea	FEE RECEIVED $ 250.00 $ 250.00 $ 250.00	BALANCE DUE $ — $ — $ —
	5. DATE OF DETERMINATION January, 1969		

6. NAME OF APPLICANT(S)	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*	8. TELEPHONE AREA CODE AND NUMBER
North American Plant Breeders	~~P. O. Box 991 Little Rock, Arkansas 72203~~ P.O. Box 2955 5201 Johnson Drive Mission, Kansas 66205	(501) 374-1652

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. STATE OF INCORPORATION	11. DATE OF INCORPORATION
Partnership	Connecticut	March 9, 1973

12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers:

13. **CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:**

- [X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [X] 13B. Exhibit B, Botanical Description of the Variety
- [X] 13C. Exhibit C, Objective Description of the Variety
- [X] 13D. Exhibit D, Data Indicative of Novelty
- [X] 13E. Exhibit E, Statement of the Basis of Applicant's Ownership

14A. Does the applicant(s) specify that seed of this variety be sold by variety name only as a class of certified seed? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [ ] YES [X] NO

14B. Does the applicant(s) specify that this variety be limited as to number of generations? [X] YES [ ] NO

14C. If "Yes," to 14B, how many generations of production beyond breeder seed? [X] FOUNDATION [ ] REGISTERED [X] CERTIFIED

The applicant declares that a viable sample of basic seed of this variety will be deposited upon request before issuance of a certificate and will be replenished periodically in accordance with such regulations as may be applicable.

The undersigned applicant(s) of this sexually-reproduced novel plant variety believes that the variety is distinct, uniform, and stable as required in Section 41 and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant is informed that false representation herein can jeopardize protection and result in penalties.

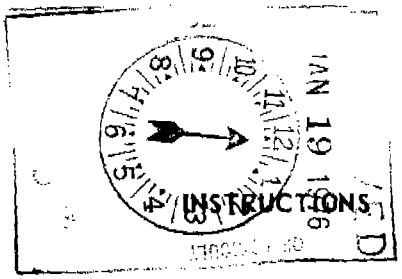
September 8, 1971
Revised January 15, 1976
(DATE)

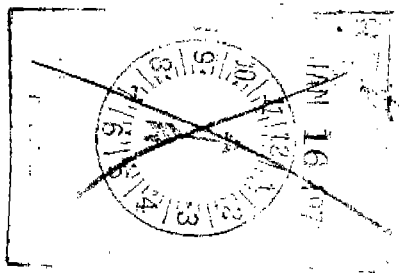
(SIGNATURE OF APPLICANT)
B.W.A. Greengrass, General Manager

(DATE)

(SIGNATURE OF APPLICANT)

FORM GR-470 (REVERSE)





GENERAL: Send an original copy of the application, exhibits and $250.00 fee to U.S. Dept. of Agriculture, Agricultural Marketing Service, Grain Division, 6525 Belcrest Road, Hyattsville, Maryland 20782. (See Section 180.175 of the regulations and rules of practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

5 Insert the date the applicant determined that he had a new variety based on the definition in Section 41 (a) of the Act and decision is made to increase the seed.

13a First, give the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method. Second, give the details of subsequent stages of selection and multiplication. Third, indicate the type and frequency of variants during reproduction and multiplication and state how these variants may be identified. Fourth, provide evidence on stability.

13b First, give any special characteristics of the seed and of the plant as it passes through the seedling stage, flowering stage and the fruiting stage. Second, describe the mature plant and compare it with a similar commercial variety grown under the same conditions, and indicate the differences.

13c A supplemental form will be furnished by the PVPO to describe in detail a variety for each kind of seed.

13d Provide complete data indicative of novelty. Seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty may be submitted. Seeds submitted may be sterile.

13e Indicate whether applicant is the actual breeder, the employer of the breeder, the owner through purchase or inheritance, etc.

North American Plant Breeders
5201 Johnson Drive
P.O. Box 2955
Mission, Kansas, 66205
(Formerly of Little Rock, Arkansas)

AMENDED EXHIBIT A

ANCHOR: ORIGIN AND BREEDING HISTORY

Anchor is a 9-clone synthetic cultivar of Flemish-type alfalfa. Of the 9 parental clones, one each was selected directly from Saranac, Apex, and Alfa cultivars. Three others trace back to Alfa and three to DuPuits through 2 cycles of recurrent selection for bacterial wilt and pea aphid resistance and other desirable agronomic characters.

Parent clones were selected following rigorous clonal, polycross, and S_1 testing for bacterial wilt and pea aphid resistance in nurseries at Ames, Iowa which started in 1960. Evaluation of parental selections for seedling vigor, hardiness, fall growth vigor, and combining ability was also conducted in clonal, S_1, polycross, and singlecross tests at Ames, Iowa; Caldwell, Idaho; Hamel, Minnesota: and Princeton. Illinois from 1965.

Breeders seed of Anchor was produced in 1969 in an isolated block in Idaho by transplanting approximately 900 cuttings of each of the 9 parent clones in a randomized arrangement. Stability of the cultivar being marketed will be assured since all commercial seed will trace to this original breeders seed which is held in storage by the Rudy-Patrick Company. Foundation seed will be produced only from breeders seed, while certified seed may be produced from breeders or foundation seed. (Seed produced from certified seed will not be recognized as Anchor.) It is confirmed that during seed production no variants, beyond the limits defined under Exhibit C, have been found and that the multiplication procedure will ensure that the seed being sold as Anchor will not have shifted in characteristics beyond accepted limits for alfalfa varieties.

GED:cm
Mission, Kansas
10/7/76

ADDENDUM TO EXHIBIT A

ANCHOR - - UNIFORMITY

It is also confirmed that:

"ANCHOR MEETS PRESENTLY ACCEPTABLE LEVELS
OF UNIFORMITY FOR ALFALFA VARIETIES."

NORTH AMERICAN PLANT BREEDERS

August 1, 1978
Date

Giles E. Dixon
Research Director

Exhibit B

Anchor Description

Anchor exhibits the typical Flemish growth habits of good seedling vigor, fast recovery following cutting, and good fall growth. Bacterial wilt resistance is better than Ranger and slightly exceeds Vernal. Pea aphid resistance is similar to Apex (about 40% resistant) and leafhopper tolerance exceeds that of Alfa, DuPuits, Apex, and Ranger, as shown by better growth, less yellowing, and darker green color under heavy infestation. Anchor's winter survival is better than Apex or Saranac.

Forage yield of Anchor is very similar to Alfa, Apex and DuPuits. Seed yield is better than Apex and Vernal and similar to Saranac.

Flowers are mostly light to dark purple with very few variegated flowers. Anchor flowers relatively early although it is a few days later than Alfa or DuPuits. The leaf color of Anchor is dark green.

EXHIBIT D

North American Plant Breeders
5201 Johnson Drive
Mission, Kansas, 66205
(Formerly of Little Rock, Arkansas)

DATA INDICATIVE OF NOVELTY - "ANCHOR"

Anchor has the fall growth habit that is typical of "Flemish" types of Alfalfa, differentiating it from hardy cultivars such as Vernal, Ranger, Titan, Scout, W.L. 202, etc., and also the non-hardy varieties such as African. (Data on Table 1 are typical of the intermediate fall growth shown by the Flemish type of Alfalfa.) In addition, the excellent Downy Mildew Resistance shown by Anchor further differentiates it from the Vernal and Ranger group (Table 2), and better pea aphid resistance than Vernal is a further advantage (Table 3).

Anchor differs from older Flemish varieties in having resistance to bacterial wilt; thus differentiating it from Alfa, DuPuits, Flamande, Europa, FD100, Socheville, and Apex, particularly, (as evidenced by the USDA Handbook 177, pages 11-13 attached, and also the Minnesota Report attached.

Anchor is most similar to the variety Saranac, but differs in the following manner:

a) Anchor is more winterhardy and more fall dormant. Data shown in Table 1 of Exhibit D and also on pages 25-26 of Minnesota Miscellaneous Report 24, 1974 Revision (enclosed).

b) Anchor has about 40% resistance to bacterial wilt while Saranac has about 55% resistance. Data in Table 4 of Exhibit D plus pages 25-26 of Minnesota Report.

c) Anchor has high pea aphid resistance while Saranac has low resistance. Evidence of this comparison is to be found in Table 3 (revised version) to Exhibit D. In addition, the winter hardiness of Anchor is much superior to that of Saranac (vide Table 5), approaching that of Vernal.

It is affirmed that Anchor is a novel and unique variety on the foregoing evidence.

GED:cm
Mission, Kansas
10/7/76

TABLE 4

1974 Spaced Plant Nursery[1], NAPB Ames, Iowa

Fall Dormancy

	1975 Data (height in inches)[2] Number of Plants in Each Category																		1975
Entry	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Average
Apollo	1	5	6	8	10	12	16	15	17	26	10	30	12	15	8	4	1	0	0	9.5
Atlas	0	2	1	5	5	16	23	33	15	29	17	25	6	9	6	3	0	0	1	10.1
Olympic	0	2	1	3	6	10	9	20	9	28	15	37	11	22	6	2	5	3	1	10.6
Victor	0	4	2	1	4	14	8	14	14	29	20	27	7	9	4	3	1	0	0	9.8
Nugget	0	1	3	5	6	8	8	16	10	30	17	13	10	6	1	1	0	0	0	9.4
Citation	0	1	4	5	6	10	17	27	18	17	20	18	7	6	3	0	0	0	0	9.4
Titan	0	0	4	6	9	20	15	25	14	18	15	10	6	7	2	2	0	0	0	8.7
Anchor	0	1	1	3	2	7	10	20	15	22	17	17	5	11	4	0	0	0	0	9.8
Vernal	1	5	5	9	13	19	25	24	20	22	16	15	4	2	2	1	0	1	0	8.2
Saranac	0	0	1	3	7	12	10	26	18	39	24	37	14	9	6	1	3	0	0	10.1

1 Seeded 5-14-74 and thinned to 12" spacing June '74.

2 1975 cut September 2, read October 14, average of 178 plants per variety.

TABLE 5

Fall dormancy of alfalfa varieties in forage trials

Entry	NAPB Ames, Iowa [1] 10-22-74	NAPB Ames, Iowa [1] 10-14-75	NAPB Ames, Iowa [1] 10-22-74	NAPB Ames, Iowa [1] 10-14-75	NAPB Ames, Iowa [1] 10-15-75	NAPB Brookston [2] Indiana 10-28-75	Univ.Neb. [2] Mead 10-6-75	Texas A & M [1] Bushland 10-15-75	Univ. Wisc. [1] Janesville 10-22-75
Apollo	6.12	11.6	6.0	14.1	5.9	5.4	---	11.4	7.62
Atlas	---	---	6.5	14.1	6.4	4.0	---	13.0	---
Olympic	7.32	13.7	6.5	14.1	7.3	2.2	4.25	13.4	9.35
Victor	7.20	13.6	6.5	14.1	6.6	3.0	5.00	14.6	8.26
Nugget	5.6	12.4	5.4	12.7	5.0	8.0	---	---	---
Citation	6.1	12.2	5.6	14.1	4.9	6.0	5.00	---	---
Anchor	5.4	13.2	5.6	13.2	5.4	6.4	---	9.1	---
Titan	4.5	11.9	4.8	12.0	5.0	7.8	---	9.5	---
Vernal [3]	4.4	9.8	4.7	11.3	---	5.4	5.75	9.1	6.12
Saranac	7.0	14.0	6.7	14.3	5.7	5.2	4.75	10.6	8.06
Agate	5.2	11.6	4.8	12.2	4.9	8.4	---	8.3	---
LSD 5%		1.9		.8		1.25			
C. V.		11.9		4.9		19.5			
Seeded	4-74		5-74		4-75	4-75	4-74	8-74	5-75

1 Height in inches

2 Higher ratings indicate less fall growth

3 Left out of data from 1975 seedings. Seed received as certified Vernal does not have Vernal fall dormancy characteristics.

TABLE 6

Crown Width of Alfalfa Varieties at Ames, Iowa

Variety	Av. Width[1] Inches	No. Plants
Anchor	4.78	139
Nugget	4.48	130
Citation	4.22	156
Apollo	4.05	195
Atlas	4.73	199
Olympic	4.34	185
Victor	4.79	158
Titan	4.94	160
Saranac	3.89	207

Seeded in 30" rows May 1974 and thinned to one plant per foot. Measured October 31, 1975.

TABLE 7

Pod Shape and Pubescence of NAPB Alfalfa Varieties, October 1975, Warden, Washington

Variety	% Plants With[1] Pubescent Pods	% Plants With Tight Pods	% Plants With Loose Pods	% Plants With Sickle Pods
Anchor	89	86	14	0
Nugget	66	87	13	0
Citation	86	90	10	0
Apollo	82	88	12	0
Atlas	77	82	18	0
Olympic	79	81	19	0
Victor	93	84	16	0

1 1-4 rating, 1 = most hair 1 + 2 = % pubescent pods

TABLE 11

Anthracnose resistance of Apollo, Atlas, Olympic and Victor alfalfa

	Laboratory Tests						Field Rating	
	Virginia Poly. Institute[1] Glenn Buss May - June 1975		Kansas State Univ.[2] Don Stuteville Aug. - Sept. 1975		North Carolina[3] State-Thad Busbice May-June 1975	NAPB[4] Ames, Iowa Nov-Dec.1974	1975 NAPB[5] Forage Trial Brookston,Ind.	
	% resistant[6] plants	Total plants rated	% survivors	Plants tested	% resistant plants	% resistant[6] plants	Total plants rated	10-28-75
Apollo	69	32	3.3	240	34	11.7	165	5.6[7]
Atlas	96	24	40.8	244	59	44.6	172	3.0
Olympic	87	31	42.4	239	41	54.5	182	2.2
Victor	85	41	50.8	235	59	40.1	155	1.4
Anchor	--	--	--	--	--	10.1	143	6.2
Saranac	36	28	2.5	208	21	--		--
Belts 2-An4	91	56	--	--	--	--	--	--
Arc	--	--	76.4	179	66	49.9	176	1.8
Saranac AR	--	--	--	--	--	--	--	2.2
LSD 5% level			21.2		17			1.2

1 "Inoculation did not take too well. Damping off also caused problems and severely reduced numbers before and during the inoculation. The data are not much more than rough indicators of resistance."

2 No ratings taken, survivors considered resistant.

3 "Test was not as good as hoped, higher than usual environmental factor. Value for Saranac is unrealistically high."

4 Test only fair as rhizoctonia invaded benches and made determinations difficult.

5 Ratings complicated by presence of mildew plus Leptosphaerulina and common leafspot

6 Test conducted using Barnes basic scheme. Ratings of 1 + 2 = resistance.

7 Lower numbers are most desirable.

TABLE 12

Downy mildew resistance of Apollo, Atlas, Olympic and Victor alfalfa in Kansas State test by Dr. Don Stuteville -September, 1975

	% Plants Mildew Free		
	Isolate		
Entry	I 5	I 7	I 5 and I 7[1] in combination
Apollo	18.5	11.7	4.7
Atlas	30.0	30.4	12.0
Olympic	32.8	19.7	12.6
Victor	28.4	14.5	5.7
Saranac (Res. Ck.)	52.8	27.3	21.5
Anchor	36.8	39.0	21.6
Arc	---	---	4.8
Vernal	---	---	4.2
Agate	---	---	7.1
Kanza (Sus. Ck.)	1.0	1.9	1.1
LSD..05	10.4	9.8	21.2

1 Very severe test

TABLE 15

Phytophthora Resistance of Apollo Alfalfa in NAPB Trials

Entry	Ames 1974[1] Phytophthora Nursery % Resistant Plants	Brookston, Indiana % Stand 7-21-74	74-85-01-01[2] 5-14-75
Apollo	58.8	72	96
Anchor	9.1	30	62
Nugget	--	24	28
Citation	--	30	64
Agate	54.5	64	92
Saranac	8.7	18	24
Titan	--	22	56
Ramsey	--	42	62
Vernal	--	28	62
LSD .05	14.3	17.14	36.8
C. V.	21.8	14.38	35.8
Replications	12	5	5

1 Procedures used are those desctibed in ARS - NC-19

2 Forage trial seeded April 18, 1974, with 100% stands. May rains kept ground saturated for three weeks. Phytophthora root rot severely depleted stands.

TABLE 17

1974 Spaced Plant Nursery, NAPB Ames, Iowa

Leafhopper Yellowing Tolerance[1]

Entry	% resistance[2]	Average Severity[2] Index	Number of plants rated
Apollo	59	3.40	178
Atlas	38	3.95	133
Olympic	65	3.31	175
Victor	56	3.38	146
Nugget	45	3.83	120
Citation	55	3.48	154
Titan	53	3.52	144
Anchor	16	4.63	128
Vernal	55	3.56	163
Saranac	37	3.97	201
Ranger	24	4.16	186
Weevlchek	87	2.70	198

1 Seeded 5-14-74 and thinned to 12" spacing June '74, ratings made 8-27-75.

2 Procedures used are those described in ARS-NC-19, 1-9 rating, 1-3 counted as resistant. Lower ASI ratings are most desirable.

TABLE 18

Leafhopper yellowing tolerance of alfalfa varieties in NAPB forage trials[1]

Entry	Ames, Iowa 7-17-74	Ames, Iowa 7-6-75	Ames, Iowa 7-17-74	Ames, Iowa 7-6-75	Ames, Iowa 8-28-75	Brookston, Ind. 7-1-75	Brookston, Ind. 8-13-75	Brookston, Ind. 8-13-75	Brookston, Ind. 6-26-75	Brookston, Ind. 8-25-75	Average
Apollo	4.8	3.2	3.6	3.8	3.2	3.0	6.0	5.8	4.2	2.8	4.0
Anchor	5.2	4.8	5.0	5.0	4.0	7.4	7.4	6.8	4.2	4.4	5.4
Atlas	--	--	4.0	4.6	3.4	--	--	3.8	3.0	3.4	--
Olympic	4.8	4.2	4.0	5.0	2.8	6.2	5.8	4.4	2.6	2.8	4.3
Victor	4.4	3.0	3.2	4.2	2.8	5.8	7.2	5.6	3.6	2.4	4.2
Nugget	5.2	4.0	3.8	4.4	2.6	6.2	7.2	6.4	3.6	4.8	4.8
Citation	5.0	3.8	4.0	4.2	2.6	6.4	6.6	3.6	2.8	2.6	4.2
Vernal[2]	5.0	3.8	4.0	4.6	--	5.6	4.6	3.6	--	--	--
Saranac	5.4	5.2	4.6	5.0	4.0	7.5	8.2	5.6	3.6	2.4	5.2
Titan	4.2	3.0	3.6	4.0	2.0	4.4	4.6	3.6	2.0	2.2	3.4
Agate	5.6	5.3	4.2	5.0	4.2	3.8	6.6	7.0	4.4	4.0	5.0
Seeded	4-74		5-74		4-75	4-74		5-74	4-75		

1 Lower numbers indicate less yellowing

2 Left out of data from 1975 seedings. Seed received as certified Vernal does not have Vernal fall dormancy characteristics.

TABLE 19

Bloom Note on Alfalfa Varieties at Hutchinson, Kansas

Variety	% Flowering[1]
Titan	27
Anchor	39
Vernal	23
Saranac	42
Apollo	33
Atlas	48
Victor	52
Olympic	38
Citation	61
Nugget	47
Agate	27
Kanza	25

1 First cutting made 5-20-75, bloom note taken 7-1-75 in forage plots

Exhibit D

Table 1

Anchor Fall Dormancy Data

Cultivars	Univ. of Minn.[1/] 1969	Canada, fall height[2/] 1969 Ottawa	1969 Guelph	1970 Guelph
Anchor	6.51	6.5	6.1	10.1
Saranac	--	6.2	5.8	9.2
DuPuits	--	7.5	7.7	10.9
Glacier	--	5.5	5.2	8.3
Ranger	7.13	--	--	
Vernal	7.89	5.5	4.5	7.8
African	4.22	--	--	
LSD 5%	0.62			

1/ Rated 2 = 14-16" tall
9 = 0-2" tall

2/ Fall height measured in inches

Exhibit D

Table 2

Downy mildew data on Anchor

Cultivars	University of Minnesota, 1969	
	% Resistant plants	Average score[1/]
Anchor	90	1.57
African	84	1.78
Ranger	53	2.33
Vernal	66	2.07
LSD 5%	18	0.46

1/ Rating with 1 = most resistant

Exhibit D

Table 3

Pea aphid resistance of Anchor as compared to Apex and Vernal (% seelings surviving)

Cultivar	Rudy-Patrick Ames 1969-70			
	Trial			Mean
	1	2	3	
Anchor	34	31	51	38.7
Apex	28	32	76	45.3
Vernal	2	1	3	2.0

Exhibit D

Table 4

Summary of Bacterial Wilt Data

Cultivar	University of Minnesota 1968 - 1970			Rudy Patrick, Ames, Iowa			
	# tests	% plants resistant[1]	Average severity index	Average severity index[2] 1969	1970	Average	Comparison with Vernal[3]
Anchor	2	42	2.1	1.89	1.32	1.60	0.95
Apex	4	1	4.1	3.22	3.12	3.17	1.87
Alfa	2	1	4.7	3.59	3.91	3.75	2.17
Haymore	1	21	3.9	--	--	--	2.05
Warrior	1	11	3.9	--	--	--	2.05
Glacier	1	1	4.4	--	--	--	2.32
DuPuits	4	1	4.6	--	--	--	2.42
Saranac	3	51	2.3	2.22	1.89	2.05	1.12
Ranger	14	17	3.1	--	--	--	1.63
Vernal	14	47	1.9	2.22	1.76	1.99	1.00
Dawson	2	16	3.1	2.02	--	--	1.24
Kanza	1	72	2.1	--	--	--	1.10
Titan	2	61	1.0	1.71	1.75	1.73	0.70

1/ % plants resistant means % of plants with a 0 or 1 rating when wilt was rated 0-5 with 0= resistant.

2/ Average severity index is mean rating of all plants when wilt was rated 0-5 with 0=resistant.

3/ Comparison with Vernal: Divided average severity index of Vernal by average severity index of variety being compared with Vernal, numbers above 1.0 are more susceptible to wilt than Vernal while numbers below 1.0 are more resistant to wilt than Vernal.

Exhibit D

Table 5

Stand count on 1968 yield test following a severe winter (1970-71) at Ames, Iowa

Cultivar	Average number of plants missing April 30, 1971 1/
Apex	30.2
Anchor	5.5
Saranac	18.0
Vernal	4.2
Scout	9.2
Titan	2.2
LSD .05	5.43

1/ Number of spaces one foot long void of plants. Plot size=3 rows 20 ft. long.

North American Plant Breeders
5201 Johnson Drive
P.O. Box 2955
Mission, Kansas, 66205
(Formerly of Little Rock, Arkansas)

EXHIBIT D - AMENDED

TABLE 3

Pea Aphid resistance of Anchor as compared to Apex and Vernal (% seedings surviving)

Rudy-Patrick Ames 1969-70

Cultivar	Trial				Mean
Anchor	34	31	51	60	44
Apex	28	32	76	70	51
Vernal	2	1	3	3	2
Saranac	--	--	--	6	6

GED:cm
Revised 10/7/76
Mission, Kansas

Exhibit E

Anchor, Statement of Ownership

Anchor was developed by Dr. R. R. Kalton, Dr. Don Brown and Dr. Marvin Miller during the 1960's while they were employees of W. R. Grace & Co., Rudy-Patrick Seed. The Rudy-Patrick Company obtained rights to all alfalfa germplasm and breeding materials upon acquisition of Rudy-Patrick Seed on July 1, 1970.

Although it was determined that Anchor was a distinct new variety by 1969; it has been carried as an experimental (RP-38) for final evaluations to determine merit and to begin initial seed increases. Thus it meets the requirements of Se. 42 of Public Law 91-577.

BILL OF SALE AND ASSIGNMENT

KNOW ALL MEN BY THESE PRESENTS that AGRIPRO BIOSCIENCES INC., a Delaware corporation (hereinafter referred to as "Seller"), pursuant to that certain Asset Purchase Agreement of even date herewith by and between Seller and AGR ACQUISITION CORPORATION, a Delaware corporation (hereinafter referred to as "Buyer") and for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, does hereby grant, bargain, sell, assign, convey and deliver unto Buyer, all of Seller's right, title and interest in and to the plant varieties owned/registered by Seller and more particularly set forth on Exhibit A attached hereto for which PVP Certificates have been issued by or may be pending before the U. S. Department of Agriculture.

TO HAVE AND TO HOLD UNTO PURCHASER, its successors and assigns forever.

IN WITNESS WHEREOF, Seller has executed this Bill of Sale and Assignment as of the 30th day of June, 1994.

AGRIPRO BIOSCIENCES INC.

BY: W. A. Zama

Title: President

STATE OF KANSAS, COUNTY OF JOHNSON

Before me, the undersigned, a Notary Public of the State and County aforesaid, personally appeared W. A. ZAMA with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence) and who, upon oath, acknowledged himself to be the PRESIDENT of Agripro Biosciences Inc., the within named bargainor, a corporation, and that he as such PRESIDENT, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as PRESIDENT.

WITNESS my hand and Notarial Seal at office the day and year above written.

Alma M. Weaver
Notary Public

My Commission Expires:
June 22, 1998

ALMA M. WEAVER
NOTARY PUBLIC
STATE OF KANSAS
My Appt. Exp. June 22, 1998

State of Delaware

Office of the Secretary of State

I, EDWARD J. FREEL, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF AMENDMENT OF "AGR ACQUISITION CORPORATION", CHANGING ITS NAME FROM "AGR ACQUISITION CORPORATION" TO "AGRIPRO SEEDS, INC.", FILED IN THIS OFFICE ON THE THIRTIETH DAY OF JUNE, A.D. 1994, AT 4:30 O'CLOCK P.M.

A CERTIFIED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO THE NEW CASTLE COUNTY RECORDER OF DEEDS FOR RECORDING.

Edward J. Freel

SECRETARY OF STATE

2394087 8100

944121584

AUTHENTICATION: 7169071

DATE: 07-01-94

CERTIFICATE OF AMENDMENT
OF
CERTIFICATE OF INCORPORATION
OF
AGR ACQUISITION CORPORATION

AGR Acquisition Corporation, a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware,

DOES HEREBY CERTIFY:

FIRST: that the Board of Directors of said corporation, by the unanimous written consent of its members filed with the minutes of the Board, adopted a resolution proposing and declaring advisable the following amendment to the Certificate of Incorporation of said corporation:

RESOLVED, that the Certificate of Incorporation of this corporation be amended by changing the Article thereof numbered "ARTICLE I" so that, as amended, said Article shall be and read as follows:

"ARTICLE I

Name

The name of the corporation (hereinafter called the 'Corporation') is Agripro Seeds, Inc."

SECOND: That in lieu of a meeting and vote of stockholders, the sole shareholder of the corporation has given unanimous written consent to said amendment in accordance with the provisions of Section 228 of the General Corporation Law of the State of Delaware.

THIRD: That the aforesaid amendment was duly adopted in accordance with the applicable provisions of Sections 242 and 228 of the General Corporation Law of the State of Delaware.

FOURTH: That the capital of said corporation shall not be reduced under or by reason of said amendment.

IN WITNESS WHEREOF, said AGR Acquisition Corporation has caused this certificate to be signed by Gary T. Hancock, its President, and attested by Ann Steelman, its Secretary, this 30th day of June, 1994.

AGR ACQUISITION CORPORATION

BY: Gary T. Hancock
Gary T. Hancock, President

ATTEST:

BY: Ann Steelman
Ann Steelman, Secretary

FORM APPROVED. OMB NO. 40-R3712

FORM GR 470-32
(3/75)

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C

OBJECTIVE DESCRIPTION OF VARIETY

Alfalfa (Medicago sativa L. complex)

NAME OF APPLICANT(S)
North American Plant Breeders

ADDRESS (*Street and No., or R.F.D. No., City, State, and Zip Code*)
P. O. Box 991
Little Rock, Arkansas 72203

VARIETY NAME OR TEMPORARY DESIGNATION
Anchor

FOR OFFICIAL USE ONLY
PVPO NUMBER
72039

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

NOTE: For single plant data a minimum of 100 plants is suggested

1. PRIMARY AREA OF ADAPTATION

All except # 5

[ ] 1 = NORTHWEST 2 = NORTHCENTRAL 3 = NORTHEAST
4 = SOUTHEAST 5 = SOUTHWEST 6 = SOUTHERN PLAINS
7 = INTERMOUNTAIN

INDICATE AREA WHERE TEST WAS CONDUCTED. FURTHER EXPLANATION CAN GO IN COMMENTS AT THE END OF THE FORM.

[ ] AREA TESTED
1,2,3,4,6,7

2. WINTER HARDINESS

[7] 1 = NON-HARDY (Mesa Sirsa) 3 = INTERMEDIATE NON-HARDY
5 = MODERATELY HARDY (Saranac) 7 = HARDY (Vernal)
9 = EXTREMELY HARDY (Norseman)

[2] SOURCE OF INFORMATION: 1 = ANTICIPATED 2 = MEASURED

[2] AREA TESTED

See Tables in Anchor application

3. FALL GROWTH HABIT

[6] 1 = ERECT (Mesa Sirsa) 3 = SEMIERECT (DuPuits)
5 = INTERMEDIATE (Saranac) 7 = SEMIDECUMENT (Vernal)
9 = DECUMBENT (Norsement)

[2] AREA TESTED

4. RECOVERY AFTER FIRST SPRING CUTTING

[3] 1 = VERY FAST (Mesa Sirsa) 3 = FAST (Saranac) 5 = INTERMEDIATE
7 = SLOW (Vernal) 9 = VERY SLOW (Norseman)

[2] AREA TESTED

5. FLOWERING DATE (FIRST SPRING GROWTH)

[ ][ ] DAYS EARLIER THAN . . . . .
[ ][ ] DAYS LATER THAN . . . . .

[ ] 1 = MESA SIRSA 2 = LAHONTAN
3 = SARANAC 4 = VERNAL
5 = NORSEMAN

[ ] AREA TESTED

6. CROWN TYPE

[6] 1 = SPREADING ROOTS 3 = SPREADING RHIZOMES (Teton)
5 = BROAD (Vernal) 7 = INTERMEDIATE (Saranac)
9 = NARROW (Mesa Sirsa)

[2] AREA TESTED

7. PLANT COLOR

[4] 3 = DARK GREEN (Weevlchek) 5 = GREEN (Vernal)
7 = LIGHT GREEN (Ranger)

[2] AREA TESTED

8. HAIRINESS

[ ][ ][ ] % PLANTS WITH PUBESCENT STEMS

[0][8][9] % PLANTS WITH PUBESCENT PODS

9. POD SHAPE

[0][8][6] % PLANTS WITH TIGHT COILS

[0][1][4] % PLANTS WITH LOOSE COILS

[0][0][0] % PLANTS WITH SICKLE PODS (Less than 1 coil)

10. GIVE ITEM LENGTH FREQUENCY DISTRIBUTION FOR SUBMITTED AND 1 TO 5 STANDARD VARIETIES 1/

VARIETY NAME	STEM LENGTH FREQUENCY DISTRIBUTION 2/											AVERAGE STEM LENGTH
	0 – 5 mm. %	6 – 10 mm. %	11 – 15 mm. %	16 – 20 mm. %	21 – 30 mm. %	31 – 40 mm. %	41 – 50 mm. %	51 – 60 mm. %	61 – 70 mm. %	71 – 80 mm. %	81 + mm. %	

11. FLOWER COLOR 3/ (DETERMINE COLOR ON FRESHLY OPENED FLOWERS)

098 % PURPLE 002 % VARIEGATED 000 % YELLOW 000 % CREAM 000 % WHITE

12. DISEASE, INSECT, AND NEMATODE RESISTANCE: (Enter resistance of submitted and check cultivars. Circle check cultivars used.)

DISEASE	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
BACTERIAL WILT	(SUBMITTED)	41	2.2		Univ. Minnesota Rosemount 1968
	(RES. CK.) VERNAL	47	1.9		
	(SUS. CK.) ~~NARRAGANSETT~~ DuPuits	1	4.6		
ANTHRACNOSE	(SUBMITTED)	10.1			NAPB Ames, Iowa 1974 (Table 11)
	(RES. CK.) ARC	49.9			
	(SUS. CK.) SARANAC				
COMMON LEAF SPOT	(SUBMITTED)				
	(RES. CK.) RAMSEY				
	(SUS. CK.) RANGER				
DOWNY MILDEW	(SUBMITTED)	21.6			Kansas State University 1975 (Table 12)
	(RES. CK.) SARANAC	21.5			
	(SUS. CK.) KANZA	1.1			
PHYTOPHTHORA ROOT ROT	(SUBMITTED)	4			University of Minnesota Misc. Report 24 Also see Table 15
	(RES. CK.) AGATE	55			
	(SUS. CK.) SARANAC	2			
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				

1/ Preferred standards: Saranac, Vernal, Norseman, Lahontan, Mesa Sirsa. Twelve hours light at 25° C with 20,000 lux of cool white florescent; 2,000 lux of incandescent filament light and twelve hours darkness at 5°C.

2/ From cotyledonary node to tip of stem 20 days after planting.

3/ For further clarification consult USDA Agricultural Handbook No. 424.

4/ Give: The institution in charge of test, (2) year, and (3) location of test. Describe test procedure if it differs from procedure suggested in ARS-NC-19, September 1974.

12. DISEASE, INSECT, AND NEMATODE RESISTANCE: (Enter resistance of submitted and check cultivars. Circle check cultivars used.)

DISEASE	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
	(SUBMITTED)				
OTHER	(RES. CK.)				
	(SUS. CK.)				
	(SUBMITTED)				
OTHER	(RES. CK.)				
	(SUS. CK.)				

INSECT	CULTIVAR	% SEEDLING SURVIVAL	AVG' SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
	(SUBMITTED)	44			NAPB Ames, Iowa 1969-70 Av. of 4 tests See Anchor application
PEA APHID	(RES. CK.) KANZA				
	(SUS. CK.) ~~RANGER~~ Vernal	2			
	(SUBMITTED)				
SPOTTED ALFALFA APHID	(RES. CK.) KANZA				
	(SUS. CK.) RANGER				

INSECT	CULTIVAR	% DEFOLIATION	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
	(SUBMITTED)				
ALFALFA WEEVIL	(RES. CK.) ARK				
	(SUS. CK.) VERNAL				

INSECT	CULTIVAR	% RESISTANT PLANTS	EMERGED ADULTS PER PLANT	EMERGED LSD .05	TEST, YEAR & LOCATION 4/
	(SUBMITTED)				
ALFALFA SEED CHALCID	(RES. CK.) LAHONTAN				
	(SUS. CK.) SONORA				

INSECT	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
	(SUBMITTED)	13 16	4.63		Top line Univ. Minn. Misc. Report 24
POTATO LEAF-HOPPER	Weevlchek (RES. CK.)	74 87	2.70		2nd line--NAPB Ames, Iowa 1975 (Table 17) Also see Table 18
	(SUS. CK.) Ranger	16 24	4.16		
	(SUBMITTED)				
OTHER	(RES. CK.)				
	(SUS. CK.)				

4/ Give: The institution in charge of test, (2) year, and (3) location of test. Describe test procedure if it differs from procedure suggested in ARS-NC-19, September 1974.

12. DISEASE, INSECT, AND NEMATODE RESISTANCE: (Enter resistance of submitted and check cultivars. Circle check cultivars used.)

INSECT	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				
NEMATODE	CULTIVAR	% RESISTANT PLANTS	INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
STEM NEMATODE	(SUBMITTED)				
	(RES. CK.) LAHONTAN				
	(SUS. CK.) RANGER				
NORTHERN ROOT KNOT NEMATODE	(SUBMITTED)				
	(RES. CK.) NEV. SYN. XX				
	(SUS. CK.) LAHONTAN				
SOUTHERN ROOT KNOT NEMATODE	(SUBMITTED)				
	(RES. CK.) MOAPA 69				
	(SUS. CK.) LAHONTAN				
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				

13. INDICATE A VARIETY THAT MOST CLOSELY RESEMBLES THE VARIETY SUBMITTED FOR THE FOLLOWING CHARACTERS:

CHARACTER	VARIETY	CHARACTER	VARIETY
AREA OF ADAPTATION	Vernal	PLANT HEIGHT	Saranac
RECOVERY AFTER CUTTING	Saranac	WINTER HARDINESS	Vernal

REFERENCES

Barnes, D.K., and C.H. Hanson, An Illustrated Summary of Genetic Traits in Tetraploid and Diploid Alfalfa, ARS Technical Bul. 1370.
Barnes, D.K., et al, Standard Tests to Characterize Pest Resistance in Alfalfa Varieties. ARS-NC-19, September 1974.
Nittler, L.W., G.W. McKee, and J.L. Newcomer, Principles and Methods of Testing Alfalfa Seed for Varietal Purity. New York Agricultural Experiment Station Bul. 807.
USDA Agricultural Handbook No. 424.

COMMENTS